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IS 7012-3 (1985): X-ray tube shield, Part 3: Type SHX-3
[LITD 9: Electromagnetic Compatibility]



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Indian Standard
**SPECIFICATION FOR
X-RAY TUBE SHIELD**
PART 3 TYPE SHX 3

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR X-RAY TUBE SHIELD

PART 3 TYPE SHX 3

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Indian Standard

SPECIFICATION FOR X-RAY TUBE SHIELD

PART 3 TYPE SHX 3

0. FOREWORD

0.1 This Indian Standard (Part 3) was adopted by the Indian Standards Institution on 20 March 1985, after the draft finalized by the Electron Tubes Sectional Committee had been approved by the Electronics and Telecommunication Division Council.

0.2 The standard IS: 7012-1973* covers the specification for X-ray tube shield, Type SHX 1 to be used with diagnostic X-ray tube with rotating anode, Type DRA 1. On reviewing, the Committee decided to include other two types of X-ray tube shields, Type SHX 2 and Type SHX 3 in this standard. The Standard has, therefore, been divided into following three parts:

Part 1	Type SHX 1
Part 2	Type SHX 2
Part 3	Type SHX 3

0.3 This standard covers the requirements of X-ray tube shield, Type SHX 3 which is mainly intended to be used with diagnostic X-ray tube, Types DRA-4 and DRA-5.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS: 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part 3) specifies the requirements of X-ray tube shield Type SHX 3.

*Specification for X-ray tube shield.

†Rules for rounding off numerical values (revised).

2. TERMINOLOGY

2.1 For the purpose of this standard, the terms and definition given in IS: 1885 (Part 4/Sec 2)-1973* shall apply.

3. TYPE DESIGNATION

3.1 The X-ray tube shield shall be designated by three letters followed by a numeral, the first two letters being acronym of shield, the third letter indicating the intended use of the shield (X for use with X-ray tubes). The numeral shall indicate the serial number of the particular type of shield.

Example : SHX 3 shall mean, X-ray tube shield Type 3.

4. DIMENSIONS

4.1 The dimensions of the X-ray tube shield shall be as given in Fig. 1.

5. REQUIREMENTS

- | | |
|-------------------------|--|
| a) Nominal peak voltage | 125 kV for X-ray tube type DRA-4
150 kV for X-ray tube type DRA-5 |
|-------------------------|--|

NOTE — This test shall be conducted by the manufacturer at a test voltage of 20 percent higher than the rated voltage. The manufacturer's certificate shall be considered sufficient for this test.

- | | |
|---|--|
| b) Total heat storage capacity | 130 000 joules (1750000 HU) <i>Min</i> |
| c) Maximum continuous rating | |
| without fan | 300 W (400 HU/Sec) |
| with fan | 450 W (600 HU/Sec) |
| d) Maximum permissible outer wall temperature | 100°C |
| e) Operating ambient temperature | -10°C to + 55°C |
| f) Distance between focal spot to diaphragm flange | for 0.6 mm spot 87 mm
for 1.0 mm spot 78 mm |
| g) Dimensions of the lead cone aperture in the ray port | 24 mm × 28 mm |
| h) Distance between focal spot and the aperture in the ray port lead cone | 40 mm |
| j) Total filtration | 2.5 mm Al <i>Min</i> |

*Electrotechnical vocabulary: Part 4 Electron tubes, Section 2 X-ray tubes (first revision).

- | | |
|--|--|
| k) Quick start (1 sec) for
8 400 rpm approximately
at 150 Hz | 400 to 450 V |
| m) Continuous rotation | 90 V to 150 V and at frequency
150 Hz |

6. PROTECTION

6.1 X-ray — The tube shield shall be so designed as to afford protection against X-rays in accordance with IS:6567-1972*.

6.2 Electric Shock — The tube shield shall be so designed as to provide protection against electric shock in accordance with IS:8607 (Part 2)-1978†.

7. ADDITIONAL REQUIREMENTS

7.1 High tension receptacle on the shield shall conform to IS:6758-1972‡.

7.2 The cable used shall be in accordance with IS:6757-1972§.

7.3 The H.T. Insulating oil shall be in accordance with IS:335-1972||.

7.4 The weight of the X-ray tube shield with X-ray tube and filled with suitable insulating oil shall be 25 kg approx.

7.5 The cable port screw thread details shall be specified.

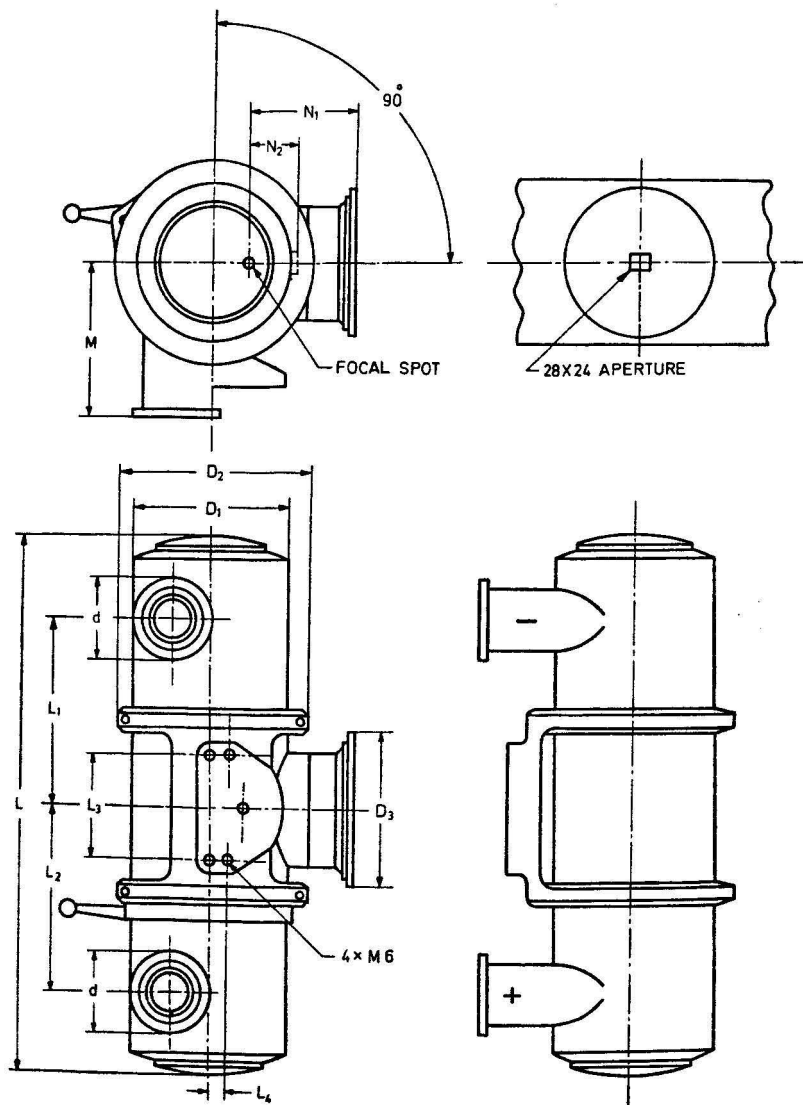
*Specification for radiation protection for an X-ray tube in a protective tube housing, operating between 10 kV and 400 kV.

†General and safety requirements for electrical equipment used in medical practice: Part 2 Protection against electric shock.

‡Dimensions for high tension receptacles for X-ray tubes.

§Dimensions for high tension cable terminations for X-ray tubes.

||Specification for new insulating oils for transformers and switchgear (*second revision*).



DIMENSIONS

L_s		L	D_1	R	L_1	L_2	α	M	N_1	N_2	L_3	D_s
21	Nom mm	—	—	—	166	152	70	—	80	40	92	—
	Max mm	486	168	136	—	—	—	125	—	—	—	202

FIG. 1 X-RAY TUBE SHIELD TYPE SHX 3



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